Notes on Amblypygi Found in Territories Adjacent to Japan

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THE PEDIPALPI form an order of arachnids found throughout Asia, the Australian islands, and the tropical and subtropical regions of Africa and North and South America. This order contains about 160 species, divided into 3 families and 26 genera. The majority of them are found in India, the Indo-Malayan region, Central America, and northern South America. These two major concentrations in the Old and the New Worlds appear to be the centers of dispersions for the Pedipalpi.

Some species are quite small, so small that they can hardly be seen by the naked eye. Consequently, many of them have little interest to our daily lives. However, this group is very interesting scientifically and attracts the attention of many arthropodologists.

The Amblypygi, one of the several families of the Pedipalpi, is subdivided into 3 subfamilies, 13 genera, and about 53 species which inhabit the tropical and subtropical regions of Asia, Africa, America, and some of the neighboring islands of Australia. Their appearance is somewhat grotesque, but they are harmless and not to be feared, having no poison or strong biting jaws. Amblypygi have the following diagnosis: carapace much wider than its length; edge of abdomen round with no caudal appendage; tarsi of first pair of legs extraordinarily long and slender with many joints.

Among the 13 known genera, *Charon* Karsch, 1879, alone is found in territories adjacent to Japan. It has the following diagnosis: the tibia of the pedipalps is not broadly extended; the upper ridge of the tibia has two long spines which are almost the same length and much longer than those of the other tibia; its hand has only one long spine on each of the upper and lower ridges; there are two to four small spines on the anterior part of the long spine, and they become gradually longer near the apex. Fingers are not segmented and usually have no spines, but if they are present, only minute ones are seen at the proximal end. The corrugation on the abdomen is clearly visible at the margin of the second abdominal sternum. Of these characteristics, the most useful in distinguishing this genus from all others is the absence of joints in the fingers.

Some authors divide this genus into several species, but I consider it monotypic, with a single species known as *Charon grayi* Gervais, 1844. Furthermore, I do not think it is necessary to recognize subspecies, for variations are individual and not worthy of such recognition. I propose to call this species "Kanimushi Modoki" in Japanese.

C. grayi is found in the Malay Peninsula, Java, the Philippines, Botel Tobago (or Kōtōsho near Formosa), Sumbawa, Amboina, New Guinea, the Bismarks, and the Solomons and Palau (Pelew) in Micronesia; it appears rare in the Malay Peninsula, while rather common in the Philippines, Manila being its type locality.

Amblypygi were reported for the first time from Micronesia by Dr. T. Esaki (1936) who obtained a male, a female, and a juvenile on the island of Peleliu in the Palau group. Since that time this animal has been found occasionally in the Palau group—as far as I

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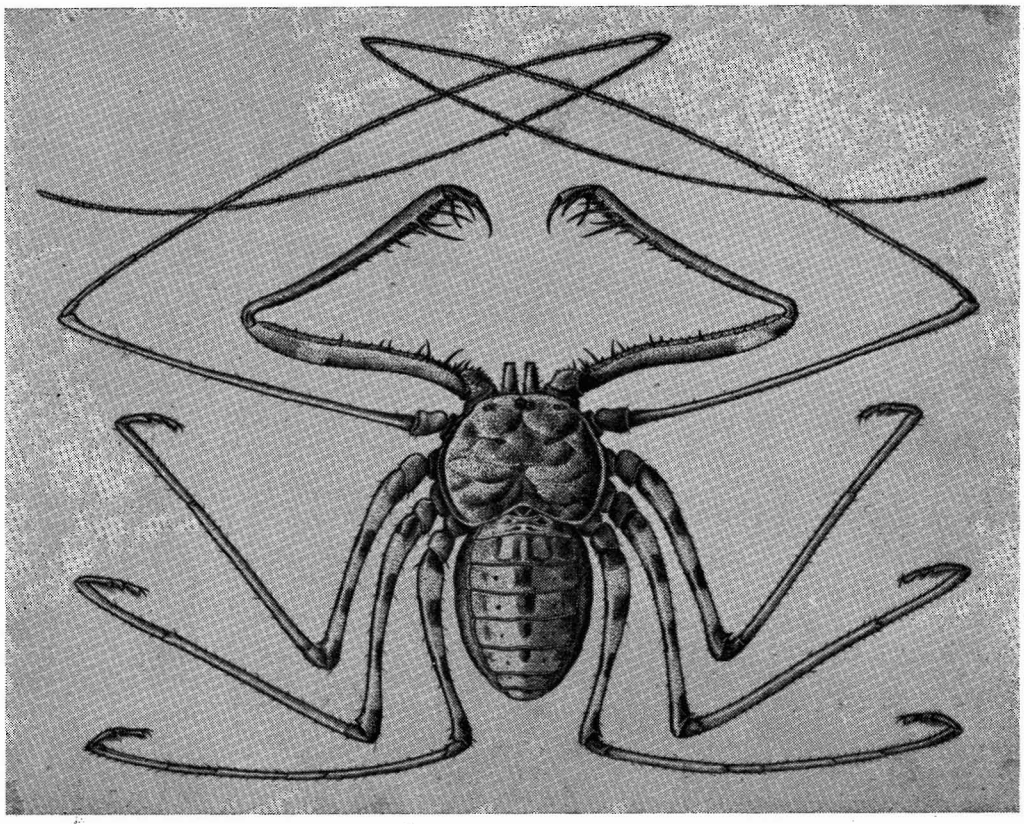

FIG. 1. Dorsal view of *Charon grayi*, female, from Botel Tobago, near Formosa. After Kano.

can ascertain, we have counted 11 examples—nevertheless it seems uncommon there. The fact that, in Micronesia, it is found only in the Palau Islands shows a close zoogeographical affinity of these islands to New Guinea and the Philippines. Fortunately I now possess 4 specimens of the 11 that have been obtained in Micronesia.

In 1936, the same year in which Dr. Esaki obtained his specimens, Dr. Kano, an able Japanese biogeographer (unfortunately missing since the war), found this species in a stalactite grotto on Botel Tobago and published an account of it in the following year. Four of his specimens were given me, and, to the best of my knowledge, these are all the Botel Tobago specimens in existence today. I am further fortunate enough to have had an opportunity to examine specimens from Mindanao, Java, and Bougainville Island. In these various specimens, I am able to detect a secondary sexual character in this species. The femur of the pedipalp in the male is longer than the second, the third, and the fourth pairs; in the female, the femur of the pedipalp is quite similar to those of the other three. I believe this is the most easily distinguishable secondary sexual character in this species.

During the breeding season, the female of this species has an egg-sac on its abdomen. One of the two specimens which Mr. K. Sekiguchi captured on Koror in the Palaus was only 7 mm. long, which led me to believe that the one whose body measuring about 10 mm. was still in a juvenile stage. Yet I found later that it already carried an egg-sac, so I concluded that it must be an adult. This

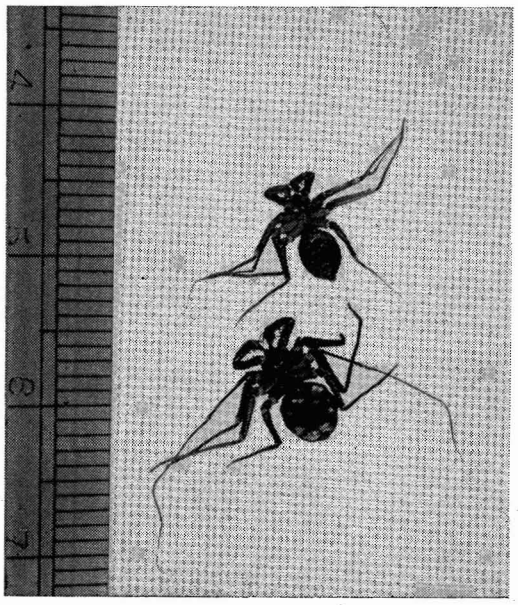

FIG. 2. *Charon grayi* from Palau. Male, above; female with egg-sac, below. Photo by the author.

particular specimen has only seven eggs in a single layer in the sac, which measures 7 mm. across. A Javanese specimen 25.5 mm. long, in my possession, has more than 80 eggs in several layers in a sac 14 mm. long. An egg of the Javanese specimen is larger than one of the small Micronesian adults which I have just mentioned. I consider that the diminutive adult 7 mm. long, which looks like a juvenile at first glance, is already matured, and that the animal grows to a larger size, even to the size of the Javanese specimen, as it lives and reproduces. One other specimen from Koror measured only 6 mm. long but, inasmuch as it shows the secondary sexual characters stated above, it must be concluded that it is a female.

In this present contribution I have not mentioned the body length, width of carapace, and second abdominal sternum, which also contribute to determining the secondary sexual characters of this species, but the description I have given suffices to distinguish the sexes.

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